[0020] FIGS. **3** to **11** show alternative embodiments of the touchpad of the present invention in side cross-section on the line A-B through the touchpad layout of **FIG. 1**.

[0021] **FIG. 12** shows a top plan view of an arrangement of electrically isolated conductive regions on the surface of a dielectric according to the present invention.

[0022] **FIG. 13** shows a side cross-sectional view of the arrangement of **FIG. 12** along the line defined by A-B.

[0023] **FIG. 14** shows a top plan view of another arrangement of electrically isolated conductive regions on the surface of a dielectric according to the present invention.

[0024] **FIG. 15** shows a side cross-sectional view of the arrangement of **FIG. 14** along the line defined by A-B.

[0025] **FIG. 16** shows a top plan view of a further arrangement of electrically isolated conductive regions on a first and a second surface of a dielectric according to the present invention.

[0026] **FIG. 17** shows a side cross-sectional view of the arrangement of **FIG. 16** along the line defined by A-B.

[0027] **FIG. 18** shows a top plan view of a pattern of conductive regions connected by conductive bridges for use with the touchpad of the present invention.

[0028] **FIGS. 19 and 20** show side cross sections of arrangements of the touchpad according to embodiments of the present invention.

[0029] **FIG. 21** shows a partial side cross-sectional view of a touchpad arrangement according to an embodiment of the present invention, showing a textured surface.

[0030] **FIG. 22** shows a schematic illustration of the grounded conductive medium in a touchpad of the present invention.

[0031] **FIG. 23** shows a schematic embodiment of a sensor system for use with the touchpad of the present invention.

[0032] **FIG. 24** shows a side cross-sectional view of a touchpad arrangement according to a further embodiment of the present invention, showing a spacing or gap in the touchpad.

[0033] **FIG. 25** shows a perspective view of another arrangement of the touchpad according to an embodiment of the present invention.

[0034] FIGS. **26** to **31** show top plan views of other touchpad arrangements according to embodiments of the present invention.

[0035] With reference to **FIG. 3**, there is shown one embodiment of a touchpad of the present invention. The touchpad is illustrated in side cross section along the line A-B of the touchpad layout of **FIG. 1**, and comprises an array of sensing conductors **2**, a supporting medium, e.g. membrane **3** and a means **4** to concentrate electric field passing between the sensing conductors **2** towards the plane of the supporting membrane **3**.

[0036] The sensing conductors **2** may be of a type as described in U.S. Pat. No. 6,137,427, and are arranged as a first and second series of parallel, spaced apart, conductors (as shown in **FIG. 1**), each conductor having appropriate connections at one or both ends, and each series being orthogonal, but not in electrical contact with each other. The first and second series of conductors **2** thus form a plurality of intersections. The conductors **2** are preferably conductive wires having a thickness dependent on the particular application of the touchpad. For example, in touch-screen applications, the wires are preferably substantially invisible to the eye and they may be less than 25 microns in diameter, or more particularly may be between about 10 microns to about 25 microns in diameter. In other applications, such as interactive masonry blocks, the wires may be reinforced steel rods of about 1 cm diameter. The wires may be made from copper, gold, tungsten, iron, carbon fibre or any other reasonably good conductor. The wires are preferably electrically insulated, for example, by coating the wires in an enamel or plastic sheath.

[0037] Alternatively in other embodiments, the first and second series of conductors **2** may be made from a material such as a silver-based conducting ink. If the conductors **2** are to be of low visibility where the touchpad is to be used in front of a suitable display system, then relatively wide (from about 250 micron to about 1000 micron) indium tin oxide traces may be used instead.

[0038] In further alternative embodiments, the first and second series of conductors **2** may also be in the form of copper tracks on a printed circuit board, or relatively fine aluminium or copper tracks in a TFT matrix.

[0039] It will be understood that the conductors **2** can be pre-formed (having their own structural integrity) prior to attachment to the supporting membrane **3**, or they may be non-self-supporting conductors that are deposited onto the membrane for support.

[0040] It is to be appreciated that any suitable method of electrically insulating the conductors **2** from each of the other conductors, and their surrounding medium, may be used, including but not limited to, dielectric (e.g. plastic or thin glass) sheaths or localised dielectric sandwich layers (not shown).

[0041] In preferred embodiments, the thickness of the conductors **2** is small compared to the inter-conductor spacing of adjacent conductors in the same series, and the inter-conductor spacing need not be the same for each adjacent pair of conductors. In accordance with the present invention, the inter-conductor spacing for a wire of 10 micron diameter, for example, is preferably in the range of about 5 cm to about 10 cm, while in conventional touchpad arrangements the equivalent spacing would need to be about 1 cm. However, it is to be appreciated that the inter-conductor spacings are dependent on the particular application of the touchpad and therefore the example range is not intended to be limiting.

[0042] In other embodiments, the first and second series of conductors **2** need not be parallel, nor is it necessary for the first and second series of conductors to be mutually orthogonal.

[0043] In all embodiments of the present invention, the sensing conductors **2** are sensitive to the proximity of a finger **1** which modifies the capacitance environment of one or more of the conductors to thereby detect the presence of the finger **1**.